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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,195	03/12/2004	Junyan Dai	5347.218	8744
20792	7590	06/07/2006	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			LEE, SIN J	
PO BOX 37428			ART UNIT	
RALEIGH, NC 27627			PAPER NUMBER	

1752

DATE MAILED: 06/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/800,195

Applicant(s)

DAI ET AL.

Examiner

Sin J. Lee

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12,13,19-21,26,32-35,45,48 and 52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12,13,20,21,32-35 and 52 is/are allowed.
- 6) ☒ Claim(s) 26,45 and 48 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-11, 14-18, 22-25, 27-31, 36-44, 46, 47, 49-51 and 53-66 are canceled claims.

2. Due to new grounds of rejections, the following rejections are made non-final.

The Examiner sincerely apologizes for any inconvenience caused by this.

Specification

3. The disclosure is objected to because of the following informalities: In the chemical formula for poly(dimethylphenylvinylsilane-b-isoprene) shown in [0047] of pg.8 of specification, applicants need to change the single bond between –CH- and –CH₂ in the isoprene repeating unit to a *double bond*. On pg.10 of present specification, on the first line, the “poly(pentamethyldisilylstyrene-co-*chloromethylstyrene*)” is a wrong name for the chemical formula shown at the bottom of pg.9. On pg.13 of present specification, the “boron-containing poly(styrene-b-*isoprene*)” is a wrong name for the chemical formula shown at the top of pg.13. On pg.14 of present specification, the “boron-containing poly(styrene-b-*isoprene*)” is a wrong name for the chemical formula shown at the top of pg.14. On pg.24 of present specification, the “poly(pentamethyldisilylstyrene-co-*chloromethylstyrene*)” is a wrong name for the chemical formula shown at the top of pg.24.

Appropriate correction is required.

Claim Objections

4. Claim 19 objected to because of the following informalities: In the chemical formula a, Applicants need to change the single bond between –CH- and -CH₂ in the

isoprene repeating unit into a double bond. Also, a methyl group (CH₃) is accidentally shown right above the chemical formula c, applicants need to delete it.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 45 is rejected under 35 U.S.C. 102(b) as being anticipated by Kotani et al (5,616,649).

Kotani teaches reacting a thermoplastic resin with a boron compound to form a boric acid *esterified polymer* (see abstract and col.3, lines 19-21), and thus Kotani teaches present limitation of performing esterification reaction of a boron containing group with a polymer (present claim language does not require the hydroboration reaction using dimesitylborane ("performing a hydroboration or esterification reaction of a boron containing group . . .").

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ritter (4,638,092).

Ritter teaches an organo-boron compounds, in which the boron containing radicals are preferably directly connected (through hydroboration) to a carbon atom of the polymer matrix by a least one valence of the respective boron atom (see abstract and col.6, lines 62-67). As one of the method for preparing polymer matrix, Ritter teaches (col.5, lines 10-27, col.5, lines 39-64, col.6, lines 48-51) copolymerizing one of several dienes (such as isoprene) with alpha-olefins, and all of the examples listed by Ritter for alpha-olefin are vinyl compounds. Therefore, it would have been obvious to one skilled in the art to copolymerize isoprene with one of those vinyl compounds listed for alpha-olefins and use such copolymer as Ritter's polymer matrix to be hydroborated with a reasonable expectation of obtaining organo-boron compounds with strong aerobic initiator action to start polymerizations but with improved stability when in contact with atmospheric oxygen. Thus, Ritter's teaching renders obvious present invention of claim 48 (it is the Examiner's position that Ritter's organo-boron compound, in which the boron containing radicals are connected to a carbon atom of the polymer matrix formed by copolymerizing isoprene with vinyl compound would inherently be capable of being used as a resist polymer).

9. Claims 26 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al (5,286,800).

Chung teaches (see Examples 12 and 13) graft-polymerizing *styrene* (a vinyl aromatic compound) monomer to poly(isobutylene-co-*isoprene*) containing borne

groups. Chung also teaches that the level of incorporation of the borne monomer into the polyolefin (such as poly(isobutylene-co-isoprene) may range preferably from 0.1 to 5% by mole. This range overlaps with present range of less than 1 weight percent boron, and thus make present range prima facie obvious. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a prima facie case of obviousness would exist which may be overcome by a showing of unexpected results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, Chung's teaching renders obvious present inventions of claims 26 and 48.

Allowable Subject Matter

10. Claim 52 is allowed since none of the cited prior art teaches or suggests present method of incorporating boron atoms into the polymer using dimethylborane as hydroboration agent. Claims 12, 13, 20, 21, 32-35 are allowed for the reasons previously indicated.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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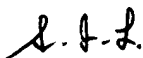
published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

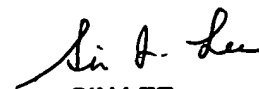
For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
June 5, 2006



SIN LEE
PRIMARY EXAMINER